

Patent Claims:

1. Transponder, which is mounted on a tire, and the transponder - including at least a transponder chip as well as a transponder antenna and the transponder being embedded into a substrate; and - the substrate being connected to an inner side of the tire via
5 a means;

characterized in that

the substrate (4) is decoupled from the inner side of the tire (3) by means of a connecting structure disposed between the substrate (4) and the inner side of the tire (3), the connecting structure being in the form of a soft or sliding support and the decoupling being in such a manner that no or only minimal mechanical stresses are transmitted to the substrate (4).

10 2. Transponder according to claim 1, characterized in that the connecting structure is configured as a cushion support (2).

3. Transponder according to claim 1 or 2, characterized in that the cushion support (2) is a silicone layer.

4. Transponder according to one of the claims 1 to 3, characterized in that the cushion support (2) is an air cushion, gel cushion or foam material cushion.

5. Transponder according to one of the claim 1 to 4, characterized in that the cushion support (2) is made of a cellular rubber.

6. Transponder according to one of the claims 1 to 5,

characterized in that the cushion support (2) has a strut-like structure.

7. Transponder according to one of the claims 1 to 6, characterized in that the substrate (4) and cushion support (2) are covered by a patch (10) which is connected to the inner side of the tire (3).

8. Transponder according to one of the claims 1 to 7, characterized in that the substrate (4) is covered by a patch (10) which is connected to the inner side of the tire (3); and a partition medium (11) being arranged between the substrate (4) and the inner side of the tire (3) on which medium the substrate (4) can slideably move.

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9. Transponder according to one of the claims 1 to 8, characterized in that a partition means is disposed between the substrate (4) and the patch (10).

10. Transponder according to one of the claims 1 to 9, characterized in that the patch (10) is permeable to air at at least one location.

11. Transponder according to one of the claims 1 to 10, characterized in that the substrate (4) is supported in a fluid in a cavity (12) of the patch.

12. Transponder according to one of the claims 1 to 11, characterized in that the substrate (4) is connected to the inner side of the tire (3) via at least one connecting strut (13),

which defines the connecting structure.

13. Transponder according to one of the claims 1 to 12, characterized in that the substrate (4) is connected to the connecting strut via a latch or snap connection (15).

14. Transponder according to one of the claims 1 to 13, characterized in that the substrate (4) has an arcuately-shaped housing contour adapted to the inner side of the tire (3).

15. Transponder according to one of the claims 1 to 14, characterized in that the substrate (4) is arranged in a patch (10), which is fixedly connected to the inner side of the tire (3) only at one or several component regions.

16. Transponder according to one of the claims 1 to 15, characterized in that a partition medium (17) is arranged between the patch (16) and the inner side of the tire (3).

17. A tire having a transponder and the transponder

- including at least a transponder chip as well as a transponder antenna and is embedded in a substrate and
- the substrate is connected to an inner side of a tire via a means,

characterized in that

the substrate (4) is decoupled from the inner side of the tire (3) by means of a connecting structure disposed between the substrate (4) and the inner side of the tire (3), the connecting structure being in the form of a soft or sliding support and the decoupling being in such a manner that no or only minimal

mechanical stresses are transmitted to the substrate (4).

18. Tire according to claim 17, characterized in that the transponder is configured according to one of the claims 2 to 16.